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Humans in technology classrooms have allowed themselves to become dependent on technology. Especially when the technology fails, the instructor has to fall back on non-technology driven methods to teach technology applications. Issues arise, including time use, teacher credibility, and efficiency of teaching. This paper presents experience of using narrative (both personal narrative and instructional narratives) in the technology classroom from 11 senior level technology classes. Use of narratives, humor and preparation in both technology and paper are suggested to overcome problems effectively and maintain an animated classroom learning experience even when sparks quite literally begin to fly. (Contains 18 references.) (Author/RS)

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Theoretically, that's how you do it...

Using narratives when computers let you down in the technology classroom

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Using narratives when computers let you down in the technology classroom

Abstract

Humans in technology classrooms have allowed themselves to become dependent on technology. Especially when the technology fails, the instructor has to fall back on non-technology driven methods to teach technology applications. Issues arise, including time use, teacher credibility, and efficiency of teaching. The paper presents experience of using narrative in the technology classroom from 11 senior level technology classes. Use of narratives, humor and preparation in both technology and paper are suggested to overcome problems effectively and maintain an animated classroom learning experience even when sparks quite literally begin to fly.

Effectiveness of Narrative as Instructional Tool

Some of the greatest teachers, rhetoricians such as Aristotle and Plato, have dispersed their knowledge through oratory and narrative. As Holladay (1984) points out, effective teachers use more narrative activities than less effective teachers. Well told stories capture the imagination of their listeners, and learning occurs almost automatically as listeners logically connect events in their minds. Abrahamson (1998) sees narrative as the foundation of teaching. Berg (2000), referring to Abrahamson (1998), calls learning the understanding of new events in the context of past events. Filtering out the "lesson learned," the morale of the story, implies that listeners interpret what they have heard or read. This interpretation is based on personal experience and context, allowing for multiple perspectives and cultural influences.

In the modern classroom, narratives are used for much the same reasons as stories have always been told, to teach in an entertaining fashion. Narratives in the classroom are used mostly for younger age groups. As the students mature, narratives lose their prominence in the curriculum and later are found predominantly, but not exclusively, in English and literature classrooms.

Plowman (1996) and her line of research show a re-surfacing of narrative in a new context, and a new format. She studies narrative in the multimedia context. Here, narrative takes an almost exclusively written format. The nature of the technological medium has resulted in changes of the way in which narratives are formed, shared, and stored. For example, as Plowman (1996) points out, traditionally narrative both depends and assists memory, but in the multimedia or technology context, this memory function is performed by the computer hardware. The subtle changes that stories often undergo are

lost once the story is written down. This is the case whether technology is involved or not (Norman 1988). These subtle changes derive from subjectivity and personal experience that color a person's judgment of a story, and influence his or her recitation (Berg 2000). Narratives help thus, to construct the social self (Bruner 1996), and socially constructed meaning (Hicks 1993).

This paper aims to build on the existing knowledge of the effectiveness of narrative in the classroom, but also present new evidence of how narrative can be used as an instructional tool in the technology classroom.

Two Types of Narratives in the Technology Classroom

There are numerous types of narratives, distinct mainly through their purpose. To begin with, in the classroom a major difference lies in the person of the story-teller, instructor or student. This paper will focus on narratives told by the teacher or instructor, ignoring stories students may create for writing or speech practice purposes. This paper also ignores stories students tell and share about a certain class or teacher, though all these types of narratives serve valuable purposes. Instead, this paper focuses on two specific types of narratives, both from the instructor perspective: the personal narrative, and the instructional narrative.

The personal narrative is shared mostly for context and atmosphere purposes. Often, it is little related to the actual course content, though it may be sparked by something that happened in the classroom setting. A personal example would be the incident in which I had uploaded a picture of my cat Cyber onto a website to teach students how to save a picture off a website and subsequently alter it in the graphics

software Adobe PhotoShop. Upon seeing the picture, several of my students exclaimed how "cute" this cat was, sleeping in a sink, and I found myself telling them about all the funny tricks Cyber can perform. Though my narrative took up several minutes of class time for a personal story, completely unrelated to working with graphics, it helped make me more personable in the eyes of my students, and also allowed them a brief break from concentration so that their energy was refreshed.

The instructional narrative can take two slightly different though related forms, serving related but different purposes. One of these forms is the "exemplary form," a story or narrative that relates similar events, including difficulties and successes. This form has proven most successful in the middle of a difficult, new task when a large proportion of the class either displays difficulties performing the required task, or a general frustration following failure spreads through the classroom. Especially during the first few weeks of a new semester this narrative form is successful. Students are still not familiar with the class format, the computer hardware and software used, and in many cases their confidence in their own skills is still low as they have not have had the positive experience of succeeding in many technology tasks. Instead of making comparisons between this class and previous or other sections of the same class, I have found it especially helpful to compare stories and incidents between distinctly different age groups. Hearing how previous classes mastered the same exercise sometimes frustrates students even more. They identify too much with these past students and become discouraged, thinking of themselves as "stupid" because their peers could succeed, but they themselves could not. However, I have also on occasion taught computer classes at the local Senior Citizen's Center. Most students have grandparents,

and most elderly have children or grandchildren. Thus, the students of all ages can relate to the people in my stories. I have found that students of all ages are greatly motivated when hearing about the struggles and successes of different age groups. The younger students seem to take a "if they can do it, I can do it" attitude, while older students seem to take great pride in mastering a skill younger generations have difficulties with.

The second form of the instructional narrative is more difficult to achieve, requiring preparation. This is the "content form," where narrative itself is used for instruction. The reason this form of narrative takes more preparation is that certain instructional content in the technology classroom, such as HTML code or Excel spreadsheets, don't lend themselves to a narrative format as easily as others, such as computer and Internet history, certain theories such as media richness theory, or visual rhetoric. Using narratives for these more difficult lectures is similar to coloring in the shapes in a coloring book. Using extended narrative brings more color, or in this case applicability or fun to the exercise. In the examples above, I have used the Arthurian legend of the quest for the holy grail to help students read and understand HTML code, and I have created the "Pizza Forecast" exercise in which students plan a party to hide a financial forecast Excel application inside.

A major difference between the personal and the instructional narratives, especially in the case of the "content form" of the instructional narrative, is spontaneity. Personal narratives are seldom planned, while content instructional narratives are almost always laid out meticulously while allowing for on-the-spot flexibility. The following section discusses use of narrative in a particular situation of the technology classroom, the technology failure.

When Technology Fails in the Technology Classroom

Most teachers who have used some kind of technology in the classroom, be it an overhead projector, a TV and VCR unit, the Internet, or student use of computers, have experienced technology failure: the projector fails to display the image both sharp and large, the TV volume control either deafens listeners or muffles sound, the website won't load, or computers freeze up and do inexplicable things, strangely only when students are using them. Any of these and other unmentioned problems are of concern in the classroom as they put a negative focus on the technology and take attention away from class content. In the applied technology classroom, technological problems occur on a daily basis, as technology use is a large part of the classroom schedule.

When technology fails in the technology classroom, three main issues arise from the instructor's perspective, ignoring for a moment the danger that students may get frustrated with the technology. These issues are effective time use of class time, teacher credibility, and efficiency of teaching and learning. Time use becomes a concern, because the instructor, the student involved, or both will have to spend time "fixing" the problem. In many cases, the entire class has to wait for a couple of minutes, and over the course of an hour several three-minute interferences can add up to a lot of lost class time. This time could have been spent lecturing, demonstrating, or practicing. Teacher credibility becomes an issue, as the instructor is supposed to be the "expert," but technology failure can make him or her appear to be less so. Imagine the simple task of saving a document. I showed students step-by-step as to how to proceed, and when I finally clicked the "save" button I received an error message of not being allowed to save

on my own floppy disk, plainly displayed on the projector screen. None of my students experienced the same problem, so I did not waste time trying to solve my own problem. Instead, I found myself saying, "Theoretically, that's how you do it…!" In cases where the tasks are less self-evident and more complex, teachers can easily seem unprepared, not up-to-date, or un-experienced none to their fault. Finally, efficiency of teaching and learning are endangered when too much time is spend on struggling with the technology. Also, some exercises are only possible when the technology works. For example, in a lab with 24 students, each taking an application exam on their individual computers, any non-functional computer will severely hinder performance. In this specific example, students cannot even share a computer. Similarly, if promised software or hardware are not installed, defaults on computers are changed without instructor knowledge, or projector bulbs burn out in the middle of lecture, the quality of teaching is endangered, and with it, the efficiency of learning.

Specifically, I have identified three major areas of technology failure or problems. Each will be discussed here, including advice on overcoming the problems. In general, use of narratives, humor, and meticulous preparation will greatly increase instructor "survival" beyond technology failure. It should be noted that the following situations and examples are related specifically to computer lab technology, but may be applicable to other technology used in classrooms.

Technology is Missing or Broken

The first major problem area is the obvious absence of promised technology, or technology that has miraculously broken between two class sessions. This can happen

easily in computer labs that are shared by more than one class or even department, as is probably the case for most university or college labs. Lab monitors promise to install software, and then forget, or install different versions than required. Computers "lock up," or disks get stuck in drives, and no one notifies the lab monitors. Computer parts such as towers, monitors, keyboards, or mice disappear, bulbs burn out, batteries run out, viruses attack, and even theft alarms can sound in the middle of class sessions. All of these have happened to me at one time or another.

In all these cases, help is beyond immediate control of the instructor. However, apart from the situation of the rather loud theft alarm that drove us from the classroom within seconds, class must continue despite obvious technology failure. There are only two options open to the instructor to guard against such situations, and both sound obsessive, while one whishes to have pursued these options when disaster really strikes. The first option or piece of advice is to check on the technology in advance. If class meets two or three times a week, it seems almost pointless to check on the lab in-between. However, if a change event is approaching, such as an exam that requires all computers, the beginning of instruction of a new software program, or technology had failed and was promised to be repaired, checking the lab out for oneself the day before class is crucial. In this case, the instructor can still contact the lab monitors and at least find out whether the changes, updates, or repairs will occur before the next class. The second option is closely tied the first, in that it consists of double preparation. For example, rather than relying on the fact that one can download a presentation from the Internet or a server, I recommend to bring a back-up copy on a floppy disk, and to bring a printout of it for both the instructor and the students. In most cases, this additional effort

will go unnoticed by the students as it will be unnecessary, but when disaster strikes students are grateful for an instructor that remains in charge and seems "unbeatable" by anything the technology can through against him or her.

Narratives are a powerful tool when technology so blatantly fails. Stories, possibly even about other situations in which technology failed, can divert attention from the failure to a success, or at least a funny situation, releasing tension and simultaneously enhancing teacher credibility as the instructor remains the one in control, even if he or she spends some time trying to correct any technology failure. Content narratives also help when technology failure prevents demonstration. Understanding the logic of a software program helps navigation through it, and this logic can be explained without ever opening up the program. Rather than just listing features and their location on the screen, narratives allow students to understand why a feature is located where it is. Even if the location is forgotten, the logical connections remain in the brains, and students will be able to find their way through the software easily when they finally get to use it. Even an instructor in the technology classroom should not become dependent on technology.

Students Experience Technology Problems

In all technology classes I have taught, the skill level of my students covered a broad range, from the near novice, to the guy who had his own web business. Catering to an audience as diverse as this is not easy, and is made more difficult by the variety of problems each individual student can and will experience throughout the course of the semester. There are three types of student problems that occur repeatedly in the computer lab technology classroom, and all three are solved easily. These three problems

are first, a student was not able to follow instruction quickly enough and need but one or two hints to catch up; second, a student's computer "froze" and will not respond anymore at all; and third, a student's computer does something "weird," meaning, something other than what the student intends the computer to do.

In the first case, walking to the student's computer and pointing on his or her screen greatly speeds up the problem solving time requirement. If the student with the problem sits next to a student that has shown great computer experience, it is also effective to ask this neighbor to help. Students are usually more than willing to help their peers, if encouraged by their instructor. In the second case, rebooting the computer is always the best choice. This may take a few minutes, during which the student can follow instruction on his or her neighbor's computer. Unsaved work will be lost, but as the instructor it is important to remind students to save on a regular basis. The third problem requires the most attention, as the instructor has to walk to the student's computer, assess the situation and the problem, the possible solutions, and whether time is sufficient to solve the problem or not. Every time a student experiences a technology problem, class time is lost, but rather than making the student feel self-conscious about this, I have turned student problems into another way of instruction. If I was able to solve a student computer's "weird behavior" with a few clicks, I usually share both the problem and the solution with the waiting class. This way, they can store the information in their memories, to be retrieved at a later point should they ever experience the same problem. I have found that this method works almost like an inoculation, in that it prevents future "outbreaks" of the same problem. Students are able to solve their own problems quickly and without class disruption.

Instructor Experiences Technology Problems

When an instructor experiences technology problems in the technology classroom, the situation seems threatening to his or her self-esteem, credibility, and effectiveness at first. I have found that students handle their own difficulties with technology much better if I as their instructor openly admit to problems, rather than trying to save face and pretend nothing is wrong. My credibility rises through overcoming technology problems while students are watching. Again, narratives and preparation help greatly, and so does humor.

Humoring my technology problems and myself makes me more human and personable in my students' eyes. Especially combining narratives and humor by telling stories of how I learned about technology, encountered problems, and solved them in an animated way allows students to see that technology expertise is no pedestal state that can be reached once and never lost again. Students begin to understand that the reward in using technology lies in working through problems, rather than giving in to them. If I don't have a precedent story to tell while trying to fix the technology problem, I share with them my thought process in trying to assess the problem and the solutions.

Sometimes, instructor technology problems cannot be overcome right away during class time. As with blatant technology failure, it is essential to know both content and technology of a lecture well enough to teach it without having it present. A PowerPoint presentation, for example, should be a supplement, not a substitute for instructor knowledge on the topic. Detailed knowledge of the software used is essential, so it can be described without being seen. This has tremendous advantages also, when

students call on the phone for help either at home or at the office. I can help them without having to boot up a computer.

The Human Side of Technology

Today, using technology in the classroom is still intimidating yet exciting for most students. They yearn to learn more about the technology, but fear failure. As Downs, Javidi and Nussbaum (1988) point out, narratives, humor and self-disclosure help students understand material better. These strategies also help students enjoy the classroom more, and take away some of the fear associated with technology use. There are indeed, people who seem to have bad computer karma, but they are few. Most students thrive on the idea that there is no such thing as a state of perfection in acquiring technology skills. The goal is to improve, and then, to improve upon the new level of expertise once again.

Along the way, frustration with the technology, the class, or even one-self is common. It is important to point out to the students just how common this frustration is, and how important. With technology, frustration is a signal that a problem area has been defined. Rather than seeing this as a dead-end, students have to understand that problems are there to be tackled. Once they have defined their own problem, they already know how NOT to do something, and from there the path to success is only a matter of persistence.

In order to help students in maintaining a positive attitude toward technology and the technology classroom, assignments must be applicable to both real life situations in general, and students' goals in specific. Too many times assignments are made just for

the purpose of practice. Students see this as a burden. However, turning practice into play, or allowing students to shape assignments in order to suit their own needs drastically increases student motivation. Students are not in control over the classroom, but they are in control over their own level of learning. Taking a broader perspective and reminding students of all the skills they have already acquired throughout the semester helps them gain a sense of achievement. When technology lets you down in the technology classroom, neither students nor instructor effectiveness have to fail. Tell them about it.

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